

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. A method of reducing a microbial population on carcass, meat, or meat product during processing comprising:
 - applying to the carcass, meat, or meat product during processing a medium chain peroxycarboxylic acid antimicrobial composition in an amount and time sufficient to reduce the microbial population;
 - the medium chain peroxycarboxylic acid antimicrobial composition comprising:
 - about 2 to about 500 ppm peroxyoctanoic acid;
 - about 5 to about 2000 ppm octanoic acid;
 - about 95 to about 99.99 wt-% water; and
 - about 2 to about 23,000 ppm polyalkylene oxide, monoalkyl ether of polyalkylene oxide, dialkyl ether of polyalkylene oxide, nonionic surfactant, anionic surfactant, or mixture thereof;
 - the composition comprising at least about 2 parts by weight of peroxyoctanoic acid for each 7 parts by weight of octanoic acid.
2. A method of recycling water previously applied to carcass, meat, or meat product, the method comprising:
 - recovering a medium chain peroxycarboxylic acid antimicrobial composition previously applied to carcass, meat, or meat product; and
 - adding to the recovered composition a sufficient amount of a medium chain peroxycarboxylic acid composition to yield a recycled medium chain peroxycarboxylic acid antimicrobial composition;
 - the added medium chain peroxycarboxylic acid composition comprising:
 - about 0.0005 to about 5 wt-% peroxyoctanoic acid;
 - about 0.001 to about 10 wt-% octanoic acid;
 - about 5 to about 99.99 wt-% water;

about 0.001 to about 60 wt-% polyalkylene oxide, monoalkyl ether of polyalkylene oxide, dialkyl ether of polyalkylene oxide, nonionic surfactant, anionic surfactant, or mixture thereof;

about 0.002 to about 10 wt-% oxidizing agent;

about 0.001 to about 30 wt-% inorganic acid; and

about 0.001 to about 5 wt-% sequestrant;

the composition comprising at least about 2 parts by weight of peroxyoctanoic acid for each 7 parts by weight of octanoic acid.

3. A method of recycling water previously applied to carcass, meat, or meat product, the method comprising:

recovering a medium chain peroxycarboxylic acid antimicrobial composition previously applied to carcass, meat, or meat product; and

adding to the recovered composition a sufficient amount of a medium chain peroxycarboxylic acid composition to yield a recycled medium chain peroxycarboxylic acid antimicrobial composition;

the added medium chain peroxycarboxylic acid composition comprising:

about 0.5 to about 5 wt-% peroxyoctanoic acid;

about 1 to about 10 wt-% octanoic acid;

about 5 to about 97 wt-% water;

about 1 to about 20 wt-% anionic surfactant;

about 5 to about 10 wt-% oxidizing agent;

about 15 to about 35 wt-% inorganic acid; and

about 1 to about 5 wt-% sequestrant;

the composition comprising a microemulsion.

4. A method of recycling water previously applied to carcass, meat, or meat product, the method comprising:

recovering a medium chain peroxycarboxylic acid antimicrobial composition previously applied to carcass, meat, or meat product; and

adding to the recovered composition a sufficient amount of a medium chain peroxycarboxylic acid composition to yield a recycled medium chain peroxycarboxylic acid antimicrobial composition;

the added medium chain peroxycarboxylic acid composition comprising:

about 0.0005 to about 5 wt-% peroxyoctanoic acid;

about 0.001 to about 10 wt-% octanoic acid;

about 40 to about 99.99 wt-% water;

about 0.001 to about 60 wt-% polyalkylene oxide, monoalkyl ether of polyalkylene oxide, dialkyl ether of polyalkylene oxide, anionic surfactant, nonionic surfactant, or mixture thereof, or mixture thereof;

about 0.002 to about 10 wt-% oxidizing agent;

about 0.001 to about 30 wt-% inorganic acid; and

about 0.001 to about 5 wt-% sequestrant.

5. An antimicrobial concentrate composition comprising:

a medium chain peroxycarboxylic acid composition effective for reducing the microbial burden on a surface of carcass, meat, or meat product;

the composition comprising:

about 0.0005 to about 5 wt-% peroxyoctanoic acid;

about 0.001 to about 10 wt-% octanoic acid;

about 5 to about 99.99 wt-% water;

about 0.001 to about 60 wt-% polyalkylene oxide, monoalkyl ether of polyalkylene oxide, dialkyl ether of polyalkylene oxide, nonionic surfactant, anionic surfactant, or mixture thereof;

about 0.002 to about 10 wt-% oxidizing agent;

about 0.001 to about 30 wt-% inorganic acid; and

about 0.001 to about 5 wt-% sequestrant;

the composition comprising at least about 2 parts by weight of peroxyoctanoic acid for each 7 parts by weight of octanoic acid.

6. An antimicrobial concentrate composition comprising:

a medium chain peroxycarboxylic acid composition effective for reducing the microbial burden on a surface of carcass, meat, or meat product;

the composition comprising:

about 0.5 to about 5 wt-% peroxyoctanoic acid;

about 1 to about 10 wt-% octanoic acid;

about 5 to about 97 wt-% water;

about 1 to about 20 wt-% anionic surfactant;

about 5 to about 10 wt-% oxidizing agent;

about 15 to about 35 wt-% inorganic acid; and

about 1 to about 5 wt-% sequestrant;

the composition comprising a microemulsion.

7. An antimicrobial concentrate composition comprising:

a medium chain peroxycarboxylic acid composition effective for reducing the microbial burden on a surface of carcass, meat, or meat product;

the composition comprising:

about 0.0005 to about 5 wt-% peroxyoctanoic acid;

about 0.001 to about 10 wt-% octanoic acid;

about 40 to about 99.99 wt-% water;

about 0.001 to about 60 wt-% polyalkylene oxide, monoalkyl ether of polyalkylene oxide, dialkyl ether of polyalkylene oxide, anionic surfactant, nonionic surfactant, or mixture thereof, or mixture thereof;

about 0.002 to about 10 wt-% oxidizing agent;

about 0.001 to about 30 wt-% inorganic acid; and

about 0.001 to about 5 wt-% sequestrant.

8-55. (cancelled)